

BEISEM 4111 7 EXTC (Rev) May 2013.
W.N. 2015/13

Con. 8551-13.

GS-3673

(REVISED COURSE)

(3 Hours)

[Total Marks : 100

- N.B.**
- (1) Question No. 1 is **compulsory**.
 - (2) Attempt any **four** questions out of the remaining **six** questions.
 - (3) Support your answer with **sketches/diagrams** wherever **necessary**.
 - (4) Assume suitable **data** if **required**.

1. (a) Explain forward link features of CDMA 2000. 4
- (b) Explain concept of HSDPA with respect to WCDMA. 4
- (c) What is adaptive multirate coding ? 4
- (d) Give different WLAN topologies. 4
- (e) Explain the concept of OFDM. 4
2. (a) Explain in detail components of sensor node. 10
- (b) Explain in detail various IEEE 802.11 standard used in wireless Network. 10
3. (a) Differentiate between WCDMA and CDMA 2000. 10
- (b) Calculate the downlink cell load factor and number of voice users per cell for a WCDMA system using the following data. 10
 - Information Rate (R_i) = 12.2 kbps
 - Chip Rate (R_c) = 3.84 Mcps
 - Required E_b/N_t = 4 dB
 - Average interference factor due to other cells = 0.5
 - Orthogonality factor = 0.6
 - Interference margin = 3db
4. (a) Give UMTS Air-Interface specifications, also explain 3 types of channels defined in UMTS. 10
- (b) Explain blue tooth protocol stack. 10
5. (a) Describe forward link and reverse link physical channels for CDMA 2000. 10
- (b) Explain WLAN technologies in detail. 10

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6. (a) Discuss in detail WAP programming model. 8
 (b) Using the following data for GSM 1800, Develop downlink and uplink budget and determine cell radius. 12

- Base station transmit power = $(P_b) = 36 \text{ dBm} = 4 \text{ W}$
- Mobile station transmit power = $P_m = 24 \text{ dB}_m$
- Base station noise figure = 5 dBs
- Mobile station (hand held unit) noise figure = 8 dBs
- Base station transmit and receive antenna gain = $G_A = 18 \text{ dBi}$
- Mobile antenna gain = 0 dBi
- Required signal to noise ratio (SNR) = 12 dB
- Transmit antenna Cable, connector Loss = $L_c = 5 \text{ dB}$
- BS receiver antenna cable, connector loss ($L_c = 2 \text{ dB}$)
- Orientation / body loss of mobile = 3 dB
- Shadow fading = 10.2 dB
- Thermal noise density = -174 dBm/Hz
- Antenna diversity gain at $B_s = 5 \text{ dB}$

7. Write short notes on :— 20
- (a) Wimax
 - (b) Zigbee Protocol.
